

WHAT IS CLAIMED IS:

1. A seal assembly for a turbine having a rotor with at least one bucket and a stator forming, in part, a main casing for the rotor, the seal assembly comprising:

a base seal member configured to be positioned on an inside surface of the main casing; and

an abradable seal member designed and configured for application to a tip portion of the at least one bucket, said abradable seal member being positionable in facing relation to the base seal member.

2. The seal assembly of claim 1, wherein the inside surface of the main casing is designed to be spaced a predetermined distance from the tip portion of the bucket, within a predetermined tolerance.

3. The seal assembly of claim 2, wherein the predetermined distance is between about .250 mm and about 2.05 mm and the predetermined tolerance is between about .0250 mm and about .1 mm.

4. The seal assembly of claim 2, wherein the stator and rotor are constructed such that the abradable seal member of the at least one bucket will allow the base seal member to cut a groove into the abradable seal member, if, in operation, contact occurs between the abradable seal member and the base seal member.

5. The seal assembly of claim 1, wherein the base seal member is designed as a modular, replaceable insert selectively insertable within the inside surface of the main casing.

6. The seal assembly of claim 1, wherein the abradable seal member is a coating.

7. The seal assembly of claim 1, wherein the base seal member is at least one of a knife edge and a seal strip.

8. A bucket for a turbine comprising:  
a main body having proximal and distal end portions, the proximal end portion including structure to secure it to a rotational drive element and the distal end portion including an air foil part; and  
an abradable seal member provided to the distal end portion of the main body.

9. The bucket of claim 8, wherein the abradable seal member is a coating.

10. The bucket of claim 8, wherein the distal end portion includes a bucket cover provided to a tip of the bucket, and said abradable seal member is provided on said bucket cover.

11. A method for sealing an interface between a tip portion of a rotor bucket and an inside surface of a stator casing of a turbine, the method comprising:

positioning a base seal member on the inside surface of the stator casing; and

providing an abradable seal member to a tip portion of the at least one bucket, in facing relation to the base seal member.

12. The method of claim 11, further comprising designing the inside surface of the stator casing to be spaced a predetermined distance from the tip portion of the bucket, within a predetermined tolerance.

13. The method of claim 12, wherein the predetermined distance is between about .250 mm and about 2.05 mm and the predetermined tolerance is between about .0250 mm and about .1 mm.

14. The method of claim 12, wherein the stator and rotor are constructed such that the abradable seal member of the at least one bucket will allow the base seal member to cut a groove into the abradable seal member, if, in operation, contact occurs between the abradable seal member and the base seal member.

15. The method of claim 11, wherein the base seal member is designed as a modular, replaceable insert selectively insertable within the inside surface of the main casing.

16. The method of claim 11, wherein the abradable seal member is a coating.

17. The method of claim 11, wherein the base seal member is one of a knife edge and a seal strip.

18. The method of claim 11, wherein the tip portion includes a bucket cover, and said abradable seal member is provided on said bucket cover.

19. A turbine comprising:

a rotor including at least one bucket;

a stator defining a main casing for the rotor; and

a seal assembly including:

a base seal member configured to be positioned on an inside surface of the main casing; and

an abradable seal member designed and configured for application to a tip portion of the at least one bucket, said abradable seal member being positionable in facing relation to the base seal member.

20. The turbine of claim 19, wherein the inside surface of the main casing is designed to be spaced a predetermined distance from the tip portion of the bucket, within a predetermined tolerance.

21. The turbine of claim 20, wherein the predetermined distance is between about .250 mm and about 2.05 mm and the predetermined tolerance is between about .0250 and about .1 mm.

22. The turbine of claim 20, wherein the stator and rotor are constructed such that the abradable seal member of the at least one bucket will allow the base seal member to cut a groove into the abradable seal member, if, in operation, contact occurs between the abradable seal member and the base seal member.

23. The turbine of claim 19, wherein the base seal member is designed as a modular, replaceable insert selectively insertable within the inside surface of the main casing.

24. The turbine of claim 19, wherein the abradable seal member is a coating.

25. The turbine of claim 19, wherein the base seal member is one of a knife edge and a seal strip.

26. The turbine of claim 19, further comprising a bucket cover provided to the tip of the bucket, the abradable seal member being provided to the bucket cover.

27. The turbine of claim 19, wherein the abradable seal member is provided directly to a distal end of the tip portion of the bucket.

28. The turbine of claim 19, wherein the at least one bucket includes a bucket cover.

29. The turbine of claim 28, wherein the bucket cover has an outer surface including at least one of a tooth, scoring, grooving and roughening to promote secure fixing of the abradable seal member to the outer surface of the bucket cover.

30. The turbine of claim 19, wherein the stator includes a nozzle vane provided with a supplemental base seal member and the rotor includes an outer surface provided with a supplemental abradable seal, in facing relation with the supplemental base seal member.

31. A turbine comprising:

a rotor including an outer surface and at least one bucket extending away from the outer surface;

a stator having at least one nozzle vane and

defining a main casing for the rotor; and

a seal assembly including:

a base seal member configured to be positioned on a distal end portion of the nozzle vane; and

an abradable seal member designed and configured for application to the outer surface of the rotor, said abradable seal member being positionable in facing relation to the base seal member.

32. The turbine of claim 31, wherein the base seal member includes a plurality of knife seals and the abradable seal member is a coating.